Balance between inflammatory and regulatory cytokines in systemic lupus erythematosus

Y. Yao[1], J.B. Wang[1], M.M. Xin[1], H. Li[1], B. Liu[1], L.L. Wang[2], L.Q. Wang[1] and L. Zhao[1]

[1]Department of Rheumatology and Clinical Immunology,
The Affiliated Hospital of Medical College, Qingdao University, Qingdao, China
[2]Department of Rheumatology and Immunology, Linyi People's Hospital,
Linyi, China

Corresponding author: J.B. Wang
E-mail: summer805_sun@163.com

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ABSTRACT. To investigate the cytokine profile in serum and cerebrospinal fluid (CSF) from patients with systemic lupus erythematosus (SLE) and central nervous system infection, we measured interferon-γ (IFN-γ), interleukin-1β (IL-1β), IL-4, IL-6, IL-8, IL-10, and IL-17 levels in serum and CSF from 50 SLE patients and 38 matched controls. In patients with active compared to quiescent disease, serum levels were higher for IL-1β (P = 0.042) and IL-17 (P = 0.041) but we found no significant correlation between IL-1β and IL-17 and Systemic Lupus Erythematosus Disease Activity Index (SLEDAI) (r = 0.055, r = 0.219, respectively). IL-10 level in active patients was lower compared to that in quiescent controls (P = 0.032). When comparing specific disease manifestations, IL-1β levels in patients with fever (P = 0.035) and IL-6 (P = 0.048) and IL-8 (P = 0.048) levels in those showing nervous system involvement were higher than in controls. Based on MRI results, we found that only increased cerebral ischemia was associated with increased IFN-γ levels (P = 0.009). In neuropsychiatric lupus erythematous patients, CSF levels of IL-6 (P = 0.002), IL-8 (P =

0.009), and IL-17 (P = 0.034) were significantly higher when compared with control patients. IL-10:IL-1β ratio in patients with moderate and quiescent disease was higher than in patients with disease activity (P = 0.000). Pro-inflammatory adaptive cytokines were elevated during disease flare, while regulatory mediators were elevated during periods of stable disease. Alterations in the balance between inflammatory and regulatory mediators may be targets for novel immunotherapeutic agents for managing autoimmune diseases.

Key words: Systemic lupus erythematosus; Cytokine; Inflammatory; Regulatory

